NAME: DATE:

Mastery Assessment of Unit 2 (Practice version 120)

Question 1

Let f represent a function. If $f[47] = 48$, then there exists a knowable solution to the equation below.

$$y = 3 \cdot (f[2x + 17] - 37)$$

Find the solution.

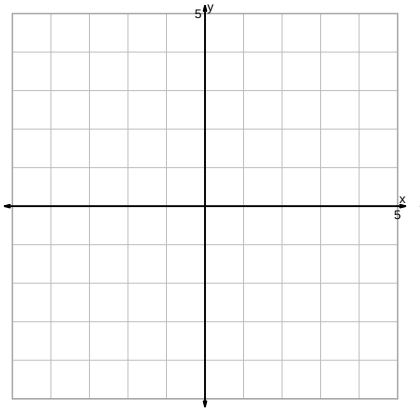
$x =$

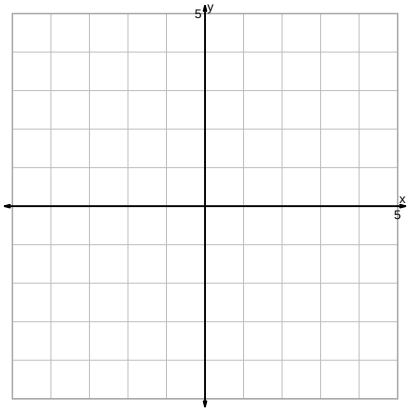
$y =$

Question 2

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.

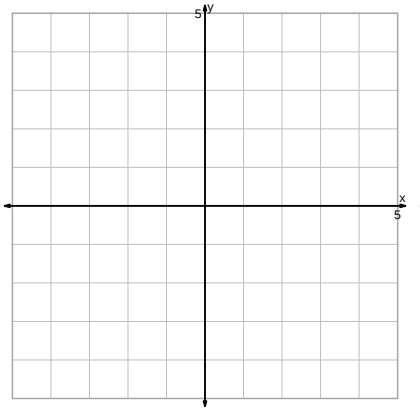
$y = 2 \cdot \sqrt{x}$

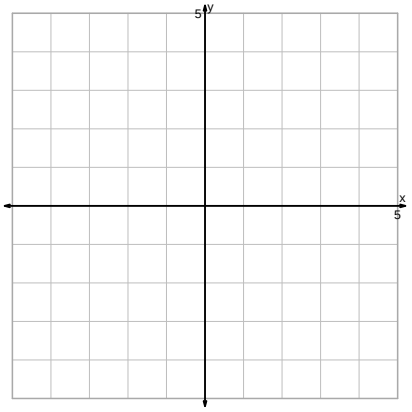




$y = \frac{x^3}{2}$

$y = \left(\frac{x}{2}\right)^3$

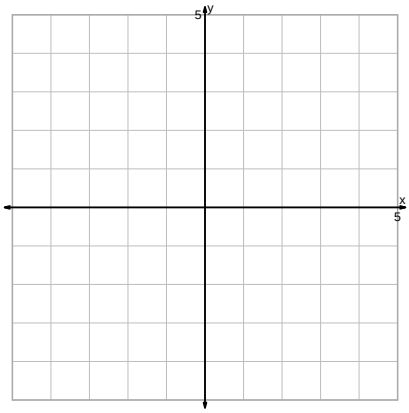


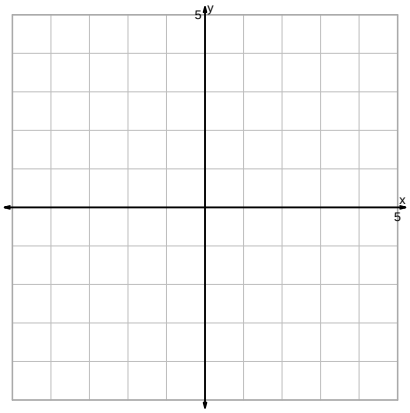


$y = \sqrt[3]{x} + 2$

Question 2 continued...

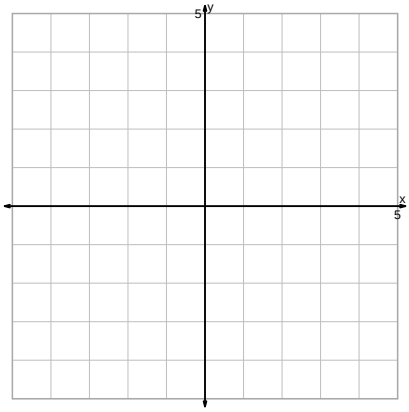
$y = \left(x - 2\right)^2$

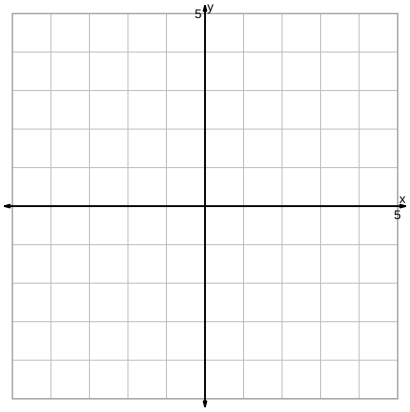




$y = 2^{2x}$

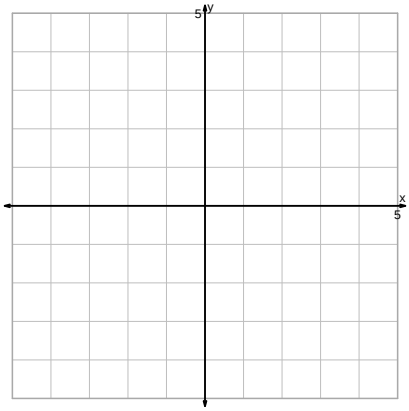
$y = \left(x + 2\right)^2$

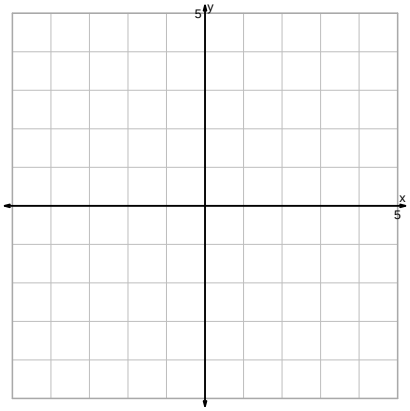




$y = \sqrt{-x}$

$y = \sqrt[3]{x} - 2$

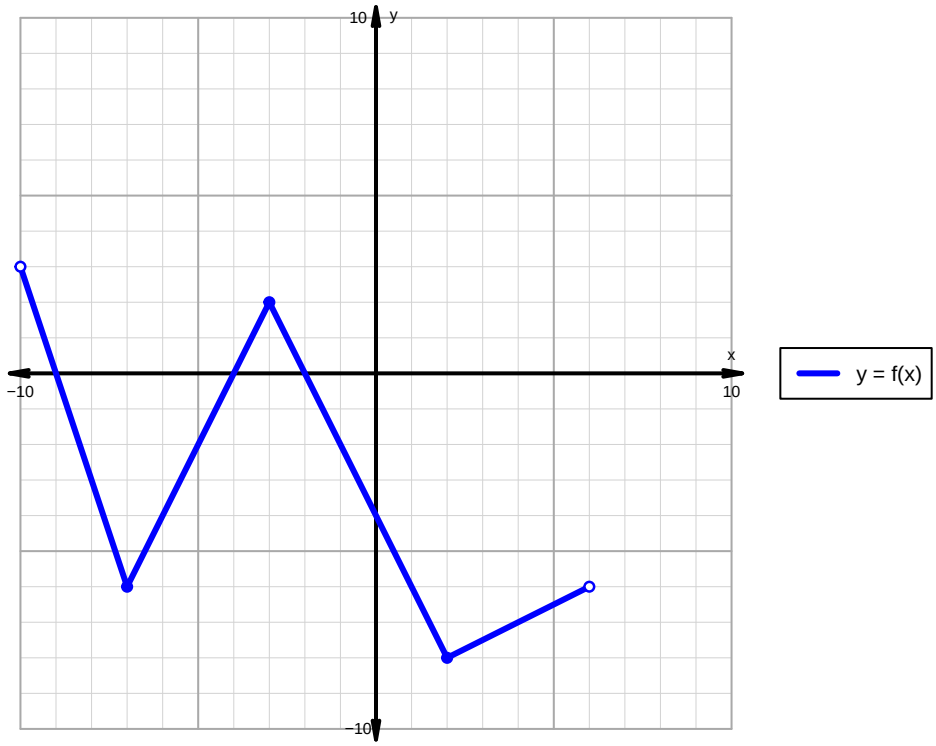




$y = -2^x$

Question 3

A function is graphed below.



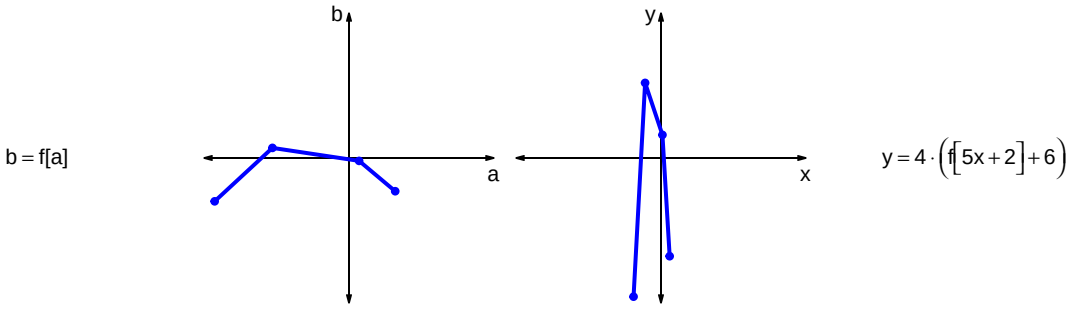
Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4

Let f represent a function. The curves $b = f[a]$ and $y = 4 \cdot (f[5x + 2] + 6)$ are represented below in a table and on graphs.

a	b	x	y
-93	-30	-19	-96
-53	7	-11	52
7	-2	1	16
32	-23	6	-68



a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 4 \cdot (f[5x + 2] + 6)$?

Question 5

A parent square-root function is transformed in the following ways:

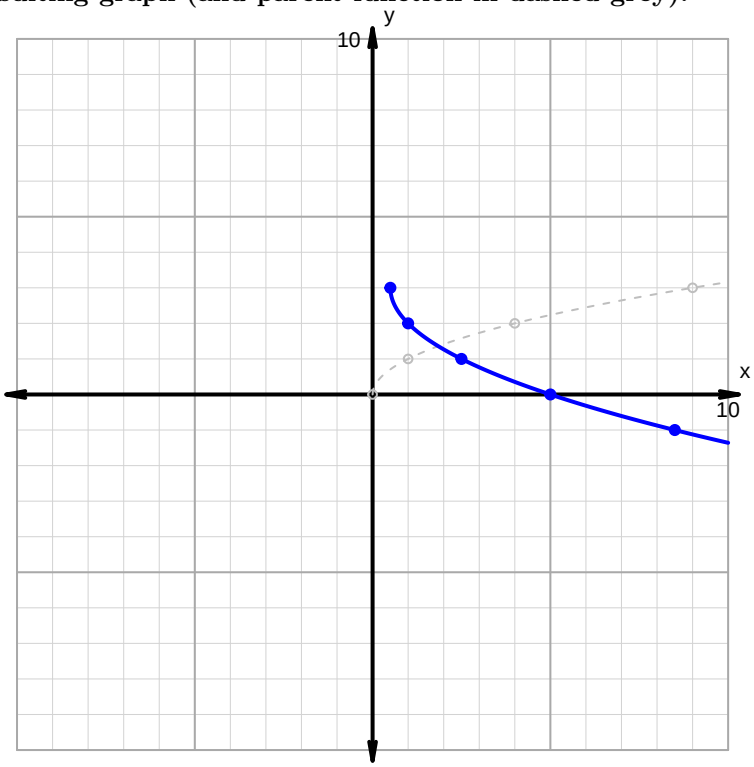
Horizontal transformations

1. Translate right by distance 1.
2. Horizontal shrink by factor 2.

Vertical transformations

1. Translate down by distance 3.
2. Vertical reflection over x axis.

Resulting graph (and parent function in dashed grey):

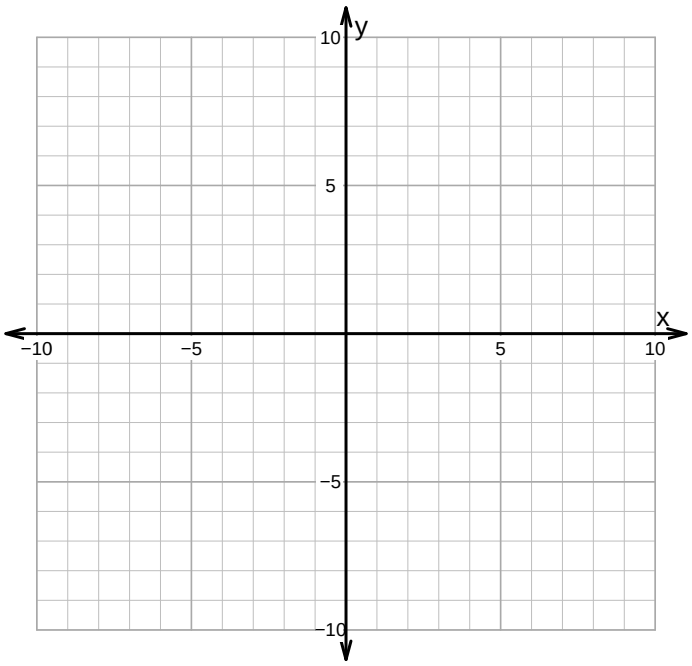


- What is the equation for the curve shown above?

Question 6

Make an accurate graph, and describe locations of features.

$$y \;=\; -2 \cdot |x - 3| + 8$$



Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	